UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
CHU, WUTCHUNG

ART UNIT	PAPER NUMBER
2468	

NOTIFICATION DATE	DELIVERY MODE
05/13/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
Office Action Summary	10/597,351	BACKLUND ET AL.
	Examiner	Art Unit	
	WUTCHUNG CHU	2468	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *7/21/2006*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *81-156* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *81-156* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *21 July 2006* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 0400163-

2, filed on 1/28/2004.

Claim Objections

2.   Claim 82 is objected to because of the following informalities: the acronyms "N-

PDU" and "GTP T-PDU" must be specified. Appropriate correction is required.

3.   Claim 84 is objected to because of the following informalities: the acronyms

"BSS", "LLC" and "PS" must be specified. Appropriate correction is required.

4.   Claim 89 is objected to because of the following informalities: the acronyms

"RLC" must be specified. Appropriate correction is required.

5.   Claim 99 is objected to because of the following informalities: the acronyms "G-

PDUs" must be specified. Appropriate correction is required.

6.   Claim 100 is objected to because of the following informalities: the acronyms

"SNDCP" must be specified. Appropriate correction is required.

7.   Claim 102 is objected to because of the following informalities: the acronyms

"SN-UNITDATA" must be specified. Appropriate correction is required.

8.   Claim 136 is objected to because of the following informalities: the acronyms

"GERAN" and "UTRAN" must be specified. Appropriate correction is required.

9.   Claim 145 is objected to because of the following informalities: the terms "at-

tribute" seems to refer "attribute". If this is true, it is suggested to change "at- tribute" to

--attribute--. Appropriate correction is required.

10.   Claim 150 is objected to because of the following informalities: the terms "the

support not is a Serving GRPS Support Node" seems to be a typographical error, and

refer to "the support node is a Serving GRPS Support Node". If this is true, it is

suggested to change "the support not is a Serving GRPS Support Node" to --the

support node is a Serving GRPS Support Node --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

11.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

12.   Claim 109 recites the limitation "the delay attribute" in line 2. There is insufficient

antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

13.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

14.   Claims 81, 94, 95, 97-99, 103-106, 117, 118, 128, 129, 137, 139, 140, 146, 147,

150, 151 and 156 are rejected under 35 U.S.C. 102(e) as being anticipated by Yi et al.,

hereinafter Yi, (US7356146).

Regarding claim 81, Yi discloses method for relocating SRNS in a mobile

communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- the base station transferring packet switched communications between a mobile

  station and a support node **(see Yi col. 17 lines 1-10 transmitter is a UTRAN and**

  the receiver is a user terminal (or user equipment as it is called by the 2GPP

  initiative);

- wherein the base station change is of a lossless type allowing lossless base station

  change of packet switched communications in unacknowledged mode **(see Yi col. 4**

  line 14 unacknowledged mode (UM)) between the mobile station and the support

  node **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28**

  line 4 on SRB#1 (UM/DCCH), which configures the UE with the new U-RNTI and

  indicated the uplink receive PDCP sequence number for each radio bearer

  configured to support lossless SRNS relocation)

- and, wherein the support node, acting as a source support node during the base

  station change **(see Yi col. 17 lines 11-62)**,

- forwards maintained sequence number information to a target support node of the

  base station change when the source and target support nodes are different **(see Yi**

  col. 27 lines 43-col. 28 line 11 the PDCP send and receive sequence numbers

are then transferred in the RNSAP Relocation Commit message from the

source to the target RNC for RABs that support lossless SRNS relocation. The

target RNC becomes the serving RNC when the RANAP Relocation Detect

message sent).

Regarding claim 94, Yi teaches the base station change allows an entire data

transfer session in unacknowledged mode **(see Yi col. 1 lines 45-60 and col. 17 lines**

11-51 and col. 27 line to col. 28 line 11 on SRB#1 (UM/DCCH?, which configures

the UE with the new U-RNTI and indicated the uplink receive PDCP sequence

number for each radio bearer configured to support lossless SRNS relocation).

Regarding claim 95, Yi teaches the data transfer session is a session of data

file transfer **(see Yi col. 14 line 62 and col. 29 line 4)**.

Regarding claim 97, Yi teaches further comprising the step of recording one or

more sequence numbers of one or more protocol data units in both uplink and downlink

(see Yi col. 18 line 23-24 sequence numbers are retrieved and col. 17 lines 11-62).

Regarding claim 98, Yi teaches the protocol data units are N-PDUs **(see Yi col.**

12 line 2 PDU and col. 4 lines 60-66).

Regarding claim 99, Yi teaches the protocol data units are G-PDUs **(see Yi col.**

12 line 2 PDU and col. 4 lines 60-66).

Regarding claim 103, Yi teaches a support node connected to a source base

station or base station subsystem to be changed informs a mobile station, also

connected to the base station or base station subsystem, on a next expected uplink

protocol data unit to be received **(see Yi col. 17 line 11-51)**.

Regarding claim 104, Yi teaches a mobile station connected to a source base station or base station subsystem to be changed informs a source support node, also connected to the base station or base station subsystem, on a next expected down-link protocol data unit to be received **(see Yi col. 17 line 11-51)**.

Regarding claim 105, Yi teaches the base station or base station subsystem relays the information between mobile station and support node with no required processing of the information **(see Yi col. 17 line 11-51)**.

Regarding claim 106, Yi teaches wherein the source base station or base station subsystem is allowed to continue receiving uplink data while emptying downlink buffers as a response to a PS Handover Command **(see Yi col. 5 lines 30-35)**.

Regarding claim 117, Yi discloses method for relocating SRNS in a mobile communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- processing means operating according to one or more protocols for receiving protocol data units **(see Yi col. 8 lines 21-24)**,

- the processing means operative to extract information for the mobile station to inform the network of a next expected downlink protocol data unit in association with packet switched base station **(see Yi col. 17 lines 11-62)** change to allow lossless base station change of packet switched communications in unacknowledged mode **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51, col. 4 line 14 unacknowledged mode (UM), and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH?, which configures the UE with the new U-RNTI and indicated the uplink receive PDCP**

sequence number for each radio bearer configured to support lossless SRNS

relocation).

Regarding claim 118, Yi discloses method for relocating SRNS in a mobile

communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- processing means operating according to one or more protocols for transferring

   protocol data units **(see Yi col. 8 lines 21-24)**; and,

- a receiver for receiving informing from the network on a next expected uplink

   protocol data unit in association with packet switched base station change **(see Yi**

   col. 17 lines 11-62) to allow lossless base station change of packet switched

   communications in unacknowledged mode **(see Yi col. 1 lines 45-60 and col. 17**

   lines 11-51, col. 4 line 14 unacknowledged mode (UM), and col. 27 line to col.

   28 line 4 on SRB#1 (UM/DCCH?, which configures the UE with the new U-RNTI

   and indicated the uplink receive PDCP sequence number for each radio bearer

   configured to support lossless SRNS relocation).

Regarding claim 128, Yi discloses method for relocating SRNS in a mobile

communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- processing means operating according to one or more protocols for receiving

   protocol data units **(see Yi col. 8 lines 21-24)**,

- the processing means extracting information for the support node to inform a mobile

   station of next expected uplink protocol data unit in association with packet switched

   base station change **(see Yi col. 17 lines 11-62)** in unacknowledged mode of the at

   least one mobile station **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51, col. 4**

line 14 unacknowledged mode (UM), and col. 27 line to col. 28 line 4 on SRB#1

(UM/DCCH?, which configures the UE with the new U-RNTI and indicated the

uplink receive PDCP sequence number for each radio bearer configured to

support lossless SRNS relocation).

Regarding claim 129, Yi discloses method for relocating SRNS in a mobile

communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- processing means operating according to one or more protocols for transferring

  protocol data units **(see Yi col. 8 lines 21-24)**; and,

- a receiver for receiving informing from the at least one mobile station on a next

  expected downlink protocol data unit in association with packet switched handover

  to allow lossless base station change **(see Yi col. 17 lines 11-62)** in

  unacknowledged mode of packet switched communications **(see Yi col. 1 lines 45-**

  60 and col. 17 lines 11-51, col. 4 line 14 unacknowledged mode (UM), and col.

  27 line to col. 28 line 4 on SRB#1 (UM/DCCH?, which configures the UE with

  the new U-RNTI and indicated the uplink receive PDCP sequence number for

  each radio bearer configured to support lossless SRNS relocation).

Regarding claim 137, Yi teaches a protocol entity of the support node maintains

sequence continuity over the support node **(see Yi col. 17 lines 11-62)**.

Regarding claim 139, Yi teaches upon completion of a packet switched base

station change, the support node sustaining a changed to base station starts

transmissions of protocol data units to the at least one mobile station at the next

protocol data unit expected by the at least one mobile station **(see Yi col. 17 lines 11-62)**.

Regarding claim 140, Yi teaches further comprising receive means, the transmissions being started upon the receive means receiving a PS Handover Complete message **(see Yi col. 8 line 21-31)**.

Regarding claim 146, Yi teaches the information on next expected protocol data unit is transferred in a message initiating or completing a change of base station or handover as regards the at least one mobile station **(see Yi col. 17 lines 11-62)**.

Regarding claim 147, Yi teaches wherein the message initiating or completing a change of base station or handover is a PS Handover Command or PS Handover Complete message **(see Yi col. 8 line 21-31)**.

Regarding claim 150, Yi teaches the support not is a Serving GPRS Support Node **(see Yi col. 6 line 38-40)**.

Regarding claim 151, Yi discloses method for relocating SRNS in a mobile communication system **(see Yi col. 13 lines 20 to col. 16 line 4)** comprising:

- receive means, transmit means and buffer means **(see Yi figure 1 and col. 17 lines 33-66)**,

- wherein the buffer means buffers downlink protocol data units, the buffer means being emptied of protocol data units destined for the at least one mobile station **(see Yi col. 5 line 30-35 and lines 46-51)**,

- the protocol data units being transmitted by the transmit means upon the receive means receiving a command of packet switched base station change **(see Yi col. 17**

lines 11-62) in unacknowledged mode, as regards the one mobile station, from the

at least one support node **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51, col. 4**

line 14 unacknowledged mode (UM), and col. 27 line to col. 28 line 4 on SRB#1

(UM/DCCH?, which configures the UE with the new U-RNTI and indicated the

uplink receive PDCP sequence number for each radio bearer configured to

support lossless SRNS relocation).

      Regarding claim 156, Yi teaches the receive means receives uplink packet

data from the at least one mobile station while the buffer means is emptied of protocol

data units destined for the at least one mobile station **(see Yi col. 5 lines 30-35)**.

Claim Rejections - 35 USC § 103

15.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

17.   Claims 82-93, 96, 130-136 and 152-155 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi in view of Heden (US2006/0165027).

Regarding claim 82, Yi teaches a protocol entity maintains N-PDU send and receive sequence numbers **(see Yi col. 17 lines 11-62)** and uplink and downlink sequence numbers for each packet flow subject to base station change of lossless type, the support node acting as a source support node during the base station change and forwarding maintained sequence number information to a target support node of the base station change **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH), which configures the UE with the new U-RNTI and indicated the uplink receive PDCP sequence number for each radio bearer configured to support lossless SRNS relocation);** and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- GTP T-PDU.

Heden from the same or similar fields of endeavor teaches the use of:

- the GPRS tunneling protocol (GTP) tunnels the PDUs through the GPRS backbone
  network 52 by adding routing information **(see Heden paragraph 26)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which
  manages allocation/deallocation of radio resources and controls handovers of
  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the
invention to use the GTP PDU as taught by Heden in the relocating SRNS in a mobile
communication system of Yi. One of ordinary skill in the art would be motivated to do so
for enabling different packet data protocols to be employed even when those protocols
are not supported by all the SGSNs **(see Heden paragraph 23).**

  Regarding claim 83, Yi teaches downlink N-PDU and downlink GTP T-PDU
sequence numbers are provided along with each N-PDU forwarded from the source
support node to the target support node **(see Yi col. 17 lines 11-62)**; and

Yi disclose all the subject matter of the claimed invention with the exception of:

- GTP T-PDU.

Heden from the same or similar fields of endeavor teaches the use of:

- the GPRS tunneling protocol (GTP) tunnels the PDUs through the GPRS backbone
  network 52 by adding routing information **(see Heden paragraph 26)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which
  manages allocation/deallocation of radio resources and controls handovers of
  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the GTP PDU as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for enabling different packet data protocols to be employed even when those protocols

are not supported by all the SGSNs **(see Heden paragraph 23).**

Regarding claim 84, Yi teaches buffered in a source BSS, which data has not

been sent to, or acknowledged by, the mobile station at the point in time when the

source BSS sends the PS handover command message to the mobile station, is

deleted **(see Yi col. 4 lines 36-50 and col. 5 lines 30-35)**; and

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

  logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden paragraph 27)**.

Regarding claim 85, Yi teaches a status message is sent back to the source support node telling it how many PDUs have been detected **(see Yi col. 5 lines 30-35)**, and

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which manages allocation/deallocation of radio resources and controls handovers of mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for Provides functionalities like multiplexing of network layer message onto a single virtual logical connection, ciphering, segmentation, and compression **(see Heden paragraph 27)**.

Regarding claim 86, Yi teaches the status message provides part of the one or more deleted PDUs **(see Yi col. 5 lines 51-59)**,

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

  logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

      Regarding claim 87, Yi teaches the status message provides the header of the

one or more deleted PDUs **(see Yi col. 5 lines 51-59)**,

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

  logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

    manages allocation/deallocation of radio resources and controls handovers of

    mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

 Regarding claim 88, Yi teaches a set of N-PDUs sent down to the source BSS

are buffered **(see Yi col. 4 lines 43-44)** in the support node for each packet flow subject

to lossless PS handover **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27**

line to col. 28 line 4 on SRB#1 (UM/DCCH), which configures the UE with the new

U-RNTI and indicated the uplink receive PDCP sequence number for each radio

bearer configured to support lossless SRNS relocation).

 Regarding claim 89, Yi teaches a PS handover command message contains an

RLC ACK/NACK report allowing a mobile station to determine which one or more N-

PDUs have been completely received by the network **(see Yi col. 4 lines 36-50)**.

 Regarding claim 90, Yi teaches a mobile station starts uplink transmission, upon

handover to a target cell, by an estimated next uplink N-PDU that was not

acknowledged by lower layers in a source cell from which the mobile station was

handed over to the target cell **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and**

col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH), which configures the UE with the new U-RNTI and indicated the uplink receive PDCP sequence number for each radio bearer configured to support lossless SRNS relocation).

Regarding claim 91, Yi teaches a PS handover command sent from the support node to a source BSS includes an expected Receive N- PDU sequence number **(see Yi col. 17 line 11-51)** at which a mobile station should start transmission in a target cell for each uplink packet flow subject to lossless handover **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH), which configures the UE with the new U-RNTI and indicated the uplink receive PDCP sequence number for each radio bearer configured to support lossless SRNS relocation).**

Regarding claim 92, Yi teaches a mobile station buffers one or more uplink N-PDUs which have been confirmed according to RLC **(see Yi col. 18 lines 23-24 sequence numbers are retrieved and col. 18 line 1 UM RLC).**

Regarding claim 93, Yi teaches uplink and downlink G-PDU sequence numbers associated with uplink and downlink N-PDUs are recorded while in unacknowledged mode between the mobile station and the support node **(see Yi col. 18 lines 23-24 sequence numbers are retrieved).**

Regarding claim 96, Yi teaches the packet switched communications in unacknowledged mode between the mobile station and the support node concerns unacknowledged mode **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH?, which configures the UE with the new**

U-RNTI and indicated the uplink receive PDCP sequence number for each radio

bearer configured to support lossless SRNS relocation) of

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

    logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

    manages allocation/deallocation of radio resources and controls handovers of

    mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

      Regarding claim 130, Yi teaches further comprising a protocol entity for

maintaining N-PDU send and receive sequence numbers and uplink and downlink

sequence numbers for each packet flow subject to base station change of lossless type

(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28 line 4 on

SRB#1 (UM/DCCH?, which configures the UE with the new U-RNTI and indicated

the uplink receive PDCP sequence number for each radio bearer configured to

support lossless SRNS relocation), the support node acting as source support node

during the base station change for forwarding maintained sequence number information

to a target support node of the base station change**(see Yi col. 17 lines 11-62)**; and

Yi disclose all the subject matter of the claimed invention with the exception of:

• GTP T-PDU.

Heden from the same or similar fields of endeavor teaches the use of:

• the GPRS tunneling protocol (GTP) tunnels the PDUs through the GPRS backbone

  network 52 by adding routing information **(see Heden paragraph 26)**;

• Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the GTP PDU as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for enabling different packet data protocols to be employed even when those protocols

are not supported by all the SGSNs **(see Heden paragraph 23).**

  Regarding claim 131, Yi teaches further comprising processing means for

providing downlink N-PDU and downlink sequence numbers along with each N-PDU

forwarded to the target support node **(see Yi col. 17 lines 11-62)**;

Yi disclose all the subject matter of the claimed invention with the exception of:

• GTP T-PDU.

Heden from the same or similar fields of endeavor teaches the use of:

- the GPRS tunneling protocol (GTP) tunnels the PDUs through the GPRS backbone network 52 by adding routing information **(see Heden paragraph 26)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which manages allocation/deallocation of radio resources and controls handovers of mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the GTP PDU as taught by Heden in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for enabling different packet data protocols to be employed even when those protocols are not supported by all the SGSNs **(see Heden paragraph 23).**

Regarding claim 132, Yi teaches further comprising a buffer for buffering a set of N-PDUs sent down to the source BSS for each packet flow subject to lossless PS handover **(see Yi col. 4 lines 37-50) (see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH?, which configures the UE with the new U-RNTI and indicated the uplink receive PDCP sequence number for each radio bearer configured to support lossless SRNS relocation).**

Regarding claim 133, Yi teaches further comprising processing means for including an RLC ACK/NACK report in a PS handover command message, thereby allowing a mobile station to determine which one or more N-PDUs have been completely received by the network **(see Yi col. 17 lines 11-62).**

Regarding claim 134, Yi teaches a PS handover command sent from the support node to a source BSS includes an expected Receive N-PDU sequence number

at which a mobile station should start transmission in a target cell for each uplink packet

flow subject to lossless handover **(see Yi col. 17 lines 11-62)**.

Regarding claim 135, Yi teaches further comprising recording means for

recording uplink and downlink G-PDU sequence numbers associated with uplink and

downlink N-PDUs while in unacknowledged mode between the mobile station and the

support node **(see Yi col. 4 lines 37-50) (see Yi col. 1 lines 45-60 and col. 17 lines**

11-51 and col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH?, which configures the

UE with the new U-RNTI and indicated the uplink receive PDCP sequence number

for each radio bearer configured to support lossless SRNS relocation).

Regarding claim 136, Yi teaches the base station change is within or between

UTRAN

Yi disclose all the subject matter of the claimed invention with the exception of:

- Geran.

Heden from the same or similar fields of endeavor teaches the use of:

- GERAN **(see Heden paragraph 30)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the GERAN **(see Heden paragraph 30)**as taught by Heden in the

relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art

would be motivated to do so for enabling different packet data protocols to be employed

even when those protocols are not supported by all the SGSNs **(see Heden paragraph**

23).

Regarding claim 152, Yi teaches processing means for deleting buffered data

that has not been sent to, or acknowledged by, the mobile station at the point in time

when the source BSS sends the PS handover command message to the mobile station

(see Yi col. 4 lines 36-50 and col. 5 lines 30-35); and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

  logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

Regarding claim 153, Yi teaches further comprising sending means for sending

a status message back to the source support node telling it how many PDUs have been

deleted **(see Yi col. 4 lines 36-50 and col. 5 lines 30-35); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a

  logical link between the mobile host and the SGSN **(see Heden paragraph 28);**

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which

  manages allocation/deallocation of radio resources and controls handovers of

  mobile stations from one base station to another **(see Heden paragraph 21).**

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

Regarding claim 154, Yi teaches the status message provides part of the one or

more deleted PDUs **(see Yi col. 4 lines 36-50 and col. 5 lines 30-35); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which manages allocation/deallocation of radio resources and controls handovers of mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for Provides functionalities like multiplexing of network layer message onto a single virtual logical connection, ciphering, segmentation, and compression **(see Heden paragraph 27)**.

Regarding claim 155, Yi teaches the status message provides the header of the one or more deleted PDUs **(see Yi col. 4 lines 36-50 and col. 5 lines 30-35);** and, Yi disclose all the subject matter of the claimed invention with the exception of:

- LLC data.

Heden from the same or similar fields of endeavor teaches the use of:

- The logical link control (LLC) layer operates above the MAC layer and provides a logical link between the mobile host and the SGSN **(see Heden paragraph 28)**;

- Multiple base stations 32 are connected to a Base Station Controller (BSC) 34 which manages allocation/deallocation of radio resources and controls handovers of mobile stations from one base station to another **(see Heden paragraph 21)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

18.   Claims 100-102, 107, 108, 113-115, 119-124, 126, 127, 138, 141-144, 148 and

149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi in view of

Puuskari (US6728208).

        Regarding claim 100, Yi teaches sequence continuity is maintained across a

support node involved in packet switched base station change **(see Yi col. 17 lines 11-**

62); and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- SNDCP.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission

    functionality maps network-level characteristics onto the characteristics of the

    underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines**

    62-65);

- The HLR of a roaming MS may be in a different mobile communication network than

    the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 101, Yi teaches one or more protocol data units include one or more N-PDU **(see Yi col. 17 lines 11-62); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- SN-UNITDATA.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 102, Yi teaches an N-PDU number is included in a header of each protocol data unit **(see Yi col. 17 lines 11-62); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- SN-UNITDATA.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 107, Yi teaches the protocol data units are compliant with **(see Yi col. 17 lines 11-62)**; and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 108, Yi teaches entities in a source support node buffers one or more downlink N-PDUs **(see Yi col. 17 lines 11-62);** and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- SNDCP.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 113, Yi teaches one or more downlink N-PDUs are buffered in entities in a target support node **(see Yi col. 17 lines 11-62)**; and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- SN-UNITDATA.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data

   packets. This information may be included in the first data octet (or in the first two

   octets, if all three parameters, the service precedence, the delay class, and the

   reliability class are included). This octet comes after the DCOMP and PCOMP

   values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see**

   Puuskari col. 14 lines 8-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating

SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be

motivated to do so for allowing very flexible and easy way to provide a certain QoS to

applications **(see Puuskari col. 3 lines 54-56)**.

   Regarding claim 114, Yi teaches the target support node buffers a number of

uplink N-PDUs corresponding to the number of N-PDUs received from the source

support node **(see Yi col. 17 line 11-51)**.

   Regarding claim 115, Yi teaches one or more uplink N-PDUs are buffered in

entities in a mobile station **(see Yi col. 17 lines 11-62); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- SN-UNITDATA.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission

   functionality maps network-level characteristics onto the characteristics of the

underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

• The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

• the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 119, Yi teaches the protocol data units are compliant with **(see Yi col. 17 lines 11-62)**; and,

Yi disclose all the subject matter of the claimed invention with the exception of:

• Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

• Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the

underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines**

62-65);

* The HLR of a roaming MS may be in a different mobile communication network than

  the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

* the MS adds the correct type of service and QoS information to the SNDCP data

  packets. This information may be included in the first data octet (or in the first two

  octets, if all three parameters, the service precedence, the delay class, and the

  reliability class are included). This octet comes after the DCOMP and PCOMP

  values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see**

  Puuskari col. 14 lines 8-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating

SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be

motivated to do so for allowing very flexible and easy way to provide a certain QoS to

applications **(see Puuskari col. 3 lines 54-56)**.

        Regarding claim 120, Yi teaches further comprising a buffer for buffering one or

more uplink N-PDUs which have been confirmed according to RLC **(see Yi col. 4 lines**

37-50).

        Regarding claim 121, Yi teaches the mobile station starts uplink transmission

upon handover to a target cell by transmitting an estimated next uplink N-PDU that was

not acknowledged by lower layers in a source cell from which the mobile station was

handed over to the target cell **(see Yi col. 1 lines 45-60 and col. 17 lines 11-51 and**

col. 27 line to col. 28 line 4 on SRB#1 (UM/DCCH), which configures the UE with the new U-RNTI and indicated the uplink receive PDCP sequence number for each radio bearer configured to support lossless SRNS relocation).

Regarding claim 122, Yi teaches wherein the processing means records N-PDU sequence numbers of N-PDUs received or transferred **(see Yi col. 17 lines 11-62); and,**

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65);**

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30);**

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15).**

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating

SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be

motivated to do so for allowing very flexible and easy way to provide a certain QoS to

applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 123, Yi teaches the protocol data units include N-PDUs **(see Yi**

col. 12 line 2 PDU and col. 4 lines 60-66).

Regarding claim 124, Yi teaches a buffer for buffering uplink N-PDUs **(see Yi**

col. 4 lines 37-50)

Regarding claim 126, Yi teaches the information on next expected protocol data

unit is transferred in a message initiating or completing **(see Yi col. 4 lines 36-50)** a

change of base station or handover as regards the mobile station **(see Yi col. 17 lines**

11-62).

Regarding claim 127, Yi teaches the message initiating or completing a change

(see Yi col. 17 lines 11-62) of base station or handover is a PS Handover Command or

PS Handover Complete message **(see Yi col. 4 lines 36-50)**.

Regarding claim 138, Yi teaches wherein the protocol entity operates **(see Yi**

col. 17 lines 11-62); and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

　　　　Regarding claim 141, Yi teaches wherein the protocol data units are compliant **(see Yi col. 17 lines 11-62)**; and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission functionality maps network-level characteristics onto the characteristics of the underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines 62-65)**;

- The HLR of a roaming MS may be in a different mobile communication network than the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data packets. This information may be included in the first data octet (or in the first two octets, if all three parameters, the service precedence, the delay class, and the reliability class are included). This octet comes after the DCOMP and PCOMP values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see Puuskari col. 14 lines 8-15)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be motivated to do so for allowing very flexible and easy way to provide a certain QoS to applications **(see Puuskari col. 3 lines 54-56)**.

Regarding claim 142, Yi teaches the processing means records, N- PDU sequence numbers of N-PDUs received or transferred **(see Yi col. 17 lines 11-62)**; and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission

    functionality maps network-level characteristics onto the characteristics of the

    underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines**

    62-65);

- The HLR of a roaming MS may be in a different mobile communication network than

    the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data

    packets. This information may be included in the first data octet (or in the first two

    octets, if all three parameters, the service precedence, the delay class, and the

    reliability class are included). This octet comes after the DCOMP and PCOMP

    values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see**

    Puuskari col. 14 lines 8-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating

SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be

motivated to do so for allowing very flexible and easy way to provide a certain QoS to

applications **(see Puuskari col. 3 lines 54-56)**.

      Regarding claim 143, Yi teaches the processing means records, G-PDU

sequence numbers of G-PDUs received or transferred **(see Yi col. 17 lines 11-62)**;

and,

Yi disclose all the subject matter of the claimed invention with the exception of:

- Sub-Network Dependent Convergence Protocol.

Puuskari from the same or similar fields of endeavor teaches the use of:

- Subnetwork Dependent Convergence Protocol (SNDCP) is a transmission

  functionality maps network-level characteristics onto the characteristics of the

  underlying network. SNDCP is specified in GSM 04.65. **(see Puuskari col. 8 lines**

  62-65);

- The HLR of a roaming MS may be in a different mobile communication network than

  the serving SGSN **(see Puuskari col. 8 lines 28-30)**;

- the MS adds the correct type of service and QoS information to the SNDCP data

  packets. This information may be included in the first data octet (or in the first two

  octets, if all three parameters, the service precedence, the delay class, and the

  reliability class are included). This octet comes after the DCOMP and PCOMP

  values in SN-Data PDUs and after the N-PDU number in SN-Unitdata PDUs **(see**

  Puuskari col. 14 lines 8-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the SNDCP, SN-UNITDATA as taught by Puuskari in the relocating

SRNS in a mobile communication system of Yi. One of ordinary skill in the art would be

motivated to do so for allowing very flexible and easy way to provide a certain QoS to

applications **(see Puuskari col. 3 lines 54-56)**.

      Regarding claim 144, Yi teaches further comprising buffer means for buffering

downlink N-PDUs **(see Yi col. 4 lines 37-50)**

Regarding claim 148, Yi teaches the buffered protocol data units are transferred upon packet switched base station change to a support node sustaining packet switched communications over the base station to which the at least one mobile station changed **(see Yi col. 4 lines 37-50)**.

Regarding claim 149, Yi teaches the buffered protocol data units are transferred upon completion**(see Yi col. 4 lines 37-50)** of a preparation phase of the packet switched base station change **(see Yi col. 8 line 21-31)**.

19.   Claims 109-112 and 145 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi and Puuskari as applied to claims 81, 107, 117, 119, 124, 128, 141, and 144 above, and further in view of Golitschek et al., hereinafter Golitschek, (US2006/0062167).

Regarding claims 109 and 145, Yi and Puuskari disclose all the subject matter of the claimed invention with the exception of:

(claim 109) the source support node buffers a number of N-PDUs corresponding to the delay attribute of the associated packet flow; and,

(claim 145) the buffer size is sufficiently large for a number of N-PDUs corresponding to a delay at-tribute of the associated packet flow.

Golitschek from the same or similar fields of endeavor teaches the use of:

- calculate the overall PDU code rate, the average number of retransmissions per PDU or the average number of retransmissions per code word. If the code rates of the code words are fixed the measurement unit 610 will preferably contain a memory

for storing the code rates of each code word. As will be described in more detail

below the measurement can be averaged over a number of PDUs or over a certain

time. For this purpose, the measurement 610 is preferably provided with a filter

function. Averaging is preferably applied depending on the round trip delay until

retransmissions can be sent and depending on how fast channel conditions change.

(see Golitschek Paragraph 50);

• Radio Network Controller RNC 210 which is responsible for the Handover decisions

that require signaling to the User Equipment UE 120 **(see Golitschek Paragraph 4).**

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the number of PDU that can contain in a memory calculated by the

round trip delay as taught by Goltschek in the modified relocating SRNS in a mobile

communication system of Yi and Puuskari. One of ordinary skill in the art would be

motivated to do so Provides an adaptive coding scheme with incremental redundancy

(see Golitschek Paragraph 30).

    Regarding claim 110, Yi and Puuskari teach the buffered N-PDUs are

forwarded to a target support node during the base station change **(see Yi col. 4 lines

36-50)**.

    Regarding claim 111, Yi and Puuskari teach the received forwarded N-PDUs in

target support node are forwarded to the mobile station **(see Yi col. 17 line 11-51)**.

    Regarding claim 112, Yi and Puuskari teach the one or more N-PDUs are

forwarded to the mobile station when the support node has received a PS Handover

Complete message **(see Yi col. 8 lines 21-31)**.

20.   Claims 116 and 125 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yi, Puuskari and Golitschek as applied to claims 81, 107, and 117 above, and

further in view of Heden (US2006/0165027).

Regarding claims 116 and 125, Yi teach the mobile station buffers a of N-

PDUs **(see Yi col. 4 lines 36-50);** and,

Yi discloses sall the subject matter of the claimed invention with the exception of:

*   number of N-PDUs corresponding to the maximum delay of RLC/MAC

    acknowledgement of transmission of

*   LLC PDU.

Heden from the same or similar fields of endeavor teaches the use of:

*   The logical link control (LLC) layer operates above the MAC layer and provides a

    logical link between the mobile host and the SGSN **(see Heden paragraph 28)**; and,

*   Variation delay beteen a minimum and maximum delay time that a message

    experiences **(see Heden paragraph 29)**.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the LLC data as taught by Heden in the relocating SRNS in a mobile

communication system of Yi. One of ordinary skill in the art would be motivated to do so

for Provides functionalities like multiplexing of network layer message onto a single

virtual logical connection, ciphering, segmentation, and compression **(see Heden**

paragraph 27).

Golitschek from the same or similar fields of endeavor teaches the use of:

- calculate the overall PDU code rate, the average number of retransmissions per

  PDU or the average number of retransmissions per code word. If the code rates of

  the code words are fixed the measurement unit 610 will preferably contain a memory

  for storing the code rates of each code word. As will be described in more detail

  below the measurement can be averaged over a number of PDUs or over a certain

  time. For this purpose, the measurement 610 is preferably provided with a filter

  function. Averaging is preferably applied depending on the round trip delay until

  retransmissions can be sent and depending on how fast channel conditions change.

  (see Golitschek Paragraph 50);

- Radio Network Controller RNC 210 which is responsible for the Handover decisions

  that require signaling to the User Equipment UE 120 **(see Golitschek Paragraph 4).**

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the number of PDU that can contain in a memory calculated by the

round trip delay as taught by Goltschek in the modified relocating SRNS in a mobile

communication system of Yi and Heden. One of ordinary skill in the art would be

motivated to do so Provides an adaptive coding scheme with incremental redundancy

(see Golitschek Paragraph 30).

Conclusion

21.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Purkayastha et al. (US2007/0249390): wireless transmit/receive unit (WTRU) for communication in a first and a different second type of wireless networks. The WTRU includes respective components configured for wireless communication of user data with the respective first and second type of wireless networks and an upper layer application processing component configured to process user data.

Chao et al (US2009/0028111): the number of PDUs stalled in the source Node B is large, the RLC will need to retransmit a large amount of PDUs, resulting in a longer latency of PDU transmission. The transmission delay may be increased further by any new data that is transmitted in the target cell prior to the lost PDUs in the source Node B are known to the sending RLC, since the Node B for each priority queue schedules transmissions as a FIFO regardless of whether the PDUs are initial transmissions or retransmissions. (para. 9)

Lohr et al. (US2007/0183451) para. 24 or Petrovic et al. (US2007/0155388) para. 38: Node B and a user equipment allows for rapid retransmissions of erroneously received data units, and may thus reduce the number of RLC (Radio Link Control) retransmissions and the associated delays. This may improve the quality of service experienced by the end user.

22.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to WUTCHUNG CHU whose telephone number is (571) 272-4064. The examiner can normally be reached on 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joe H. Cheng can be reached on (571) 272-4433. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

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you have questions on access to the Private PAIR system, contact the Electronic

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WUTCHUNG CHU/   /Joe H Cheng/
Examiner, Art Unit 2468   Supervisory Patent Examiner
                                                  Art Unit 2468